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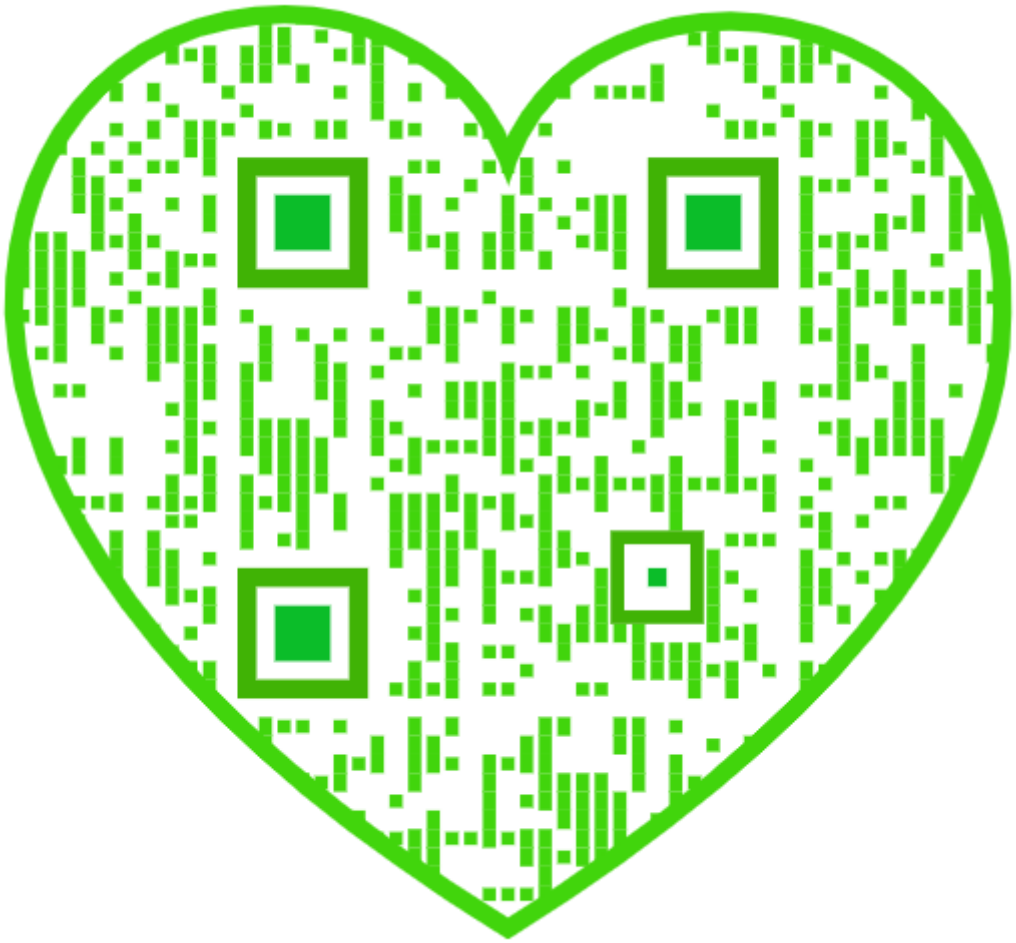

SOMETHING ABOUT PAINTING AND VARNISHING

BY

JOHN W. MASURY.

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SOMETHING

ABOUT

PAINTING AND VARNISHING.

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CHAPTER I.

HOW TO PAINT A CARRIAGE.

THERE are many ways of proceeding to the same objective point, and doctors even will disagree as to the proper mode of treating the same symptoms. Coach painters can hardly be supposed to be more unanimous than professors of the healing art, particularly when the latter named fraternity are leagued by all sorts of oaths and bonds not to affiliate or hold consultation with a school of medicine which proposes to kill or cure by some irregular method.

No doubt some will see a better road than we propose to travel to reach the same point, which is a well painted job of carriage painting in every respect.

The writer does not belong with that class which takes for granted that a thing is good *because* it is new; nor with those who cling to a time honored custom, simply for the reason that the same is sanctioned by long use; nor with those who believe that any particular theory or mode of procedure includes all that is good and avoids all which is bad.

The prejudices of craftsmen are difficult to meet and hard to overcome. One clings to a system and dogmatically pronounces it best, simply because he has never tried any other and he hates innovation. Another readily adopts or tries all suggested improvements, and becomes an innovator because of the charms and excitements of novelty. As a rule, the first will win in the race—but the second is useful in his day and generation.

Without attempting to trace the progress of improvement in vehicular construction, from the rude log-wheel carts of the ancients to the graceful and elegant vehicles of the present day, it may be asserted, without fear of contradiction, that there are few things in our advanced civilization and refinement which are more attractive, which combine more fully the useful and the beautiful, than the gracefully modelled, luxurious and comfortable carriages which are turned out from the first-class city and country manufactories.

To paint a carriage in the highest style of the art requires a judgment matured, an eye to appreciate combinations and contrasts, and a hand, cunning and skilful, to execute and perform. In nothing more than this is it true that practice alone makes perfect. Written rules and directions are valuable only as hints and suggestions, which, if properly heeded and carried into practice, may lead to the correction of errors which exist,

because of the want of proper instructions. As well might one expect to educate the ear to harmonious combinations of sounds by a treatise on musical composition, as to teach the art of painting by mere words. Yet, while the finished workman needs no written rules, there are many throughout our country, living remote from the great centres of population, who profess and practice the art of carriage painting without the opportunity of perfecting themselves in the higher branches of the profession. In the hope that to such our directions may prove of practical benefit, we give the mode of proceeding in the old method of carriage painting. Of the new and shorter method, we shall treat hereafter.

CHAPTER II.

PREPARATION OF THE SURFACE.

As the priming, or first coating of the new wood, initiates the operation, that simple process requires a word or two at the start. First, as to what shall be the material used; and second, how to apply it. And these are important questions, as the durability of the job depends in no small degree on the soundness of the initiatory proceedings. It will not be denied that

whatever material adheres most tenaciously to the wood, which best resists the changes of temperature, dryness and dampness, and wear and tear, is the best, whether it be white lead and raw oil, boiled oil, or japan, or wood filling, or any other substance.

THE OLD WAY OF DOING IT.

To mix the priming coat, thin a small quantity of ground white lead with raw linseed oil, adding a few (say two or three) spoonfuls of japan for a drier, and enough turpentine to make the paint work easily. Apply an even coat of this paint with an ordinary bristle paint brush, taking care to work the color well into the nail heads, crevices and corners of the body, wheels and carriage part. After the body has stood for four days for drying, the carriage part being meanwhile in the blacksmith's shop undergoing the process of ironing, mix color for second coat as follows: Dry white lead, mixed stiff in japan and raw oil, equal parts, and ground through the mill. Thin to proper consistency with turpentine, and apply with an evenly worn brush, taking care to work the color down smoothly. This coat should stand four days for drying and hardening. After this, fill all the holes, crevices, chinks and imperfections in the wood with hard putty, made thus: White lead three parts, whiting one part; wet with a mixture of two parts linseed oil, two parts varnish, and one part japan or gold size. When filling the screw heads and other hollows, allow the putty to stand a little above the surrounding parts; that is, the holes should be more than full to allow for any possible shrinking. All open-grained wood, as ash, must be filled with soft putty, made of white lead wet with

equal parts varnish and japan, using a square pointed putty knife. Care must be taken to fill all the pores of the wood and thoroughly remove all superfluous material from the surface. Let the body stand three days; at the end of which apply the second lead coat, mixed, dry lead in three parts japan and one part oil; mix stiff, reduce with turpentine, and apply as before. Observe that care should be taken to spread every coat evenly, whether it be lead, roughstuff, or color. This should stand three days before the application of the third and last lead coat, which should be mixed dry lead, wet with four parts japan and one part oil. After two days (four is better, if not pressed for time), the body is ready for roughstuff. We can suggest no better mode of mixing roughstuff than the following, viz.: Two parts English filling, two parts dry white lead, wet with mixture of two parts varnish and one part each japan, oil and gold size. Make into stiff paste, and reduce with turpentine to proper consistency for spreading with a well worn brush. This should be allowed two days for hardening before the application of the second coat, which should be mixed in one half the quantity of oil used in the first coat. The following day the third coat, in which no oil should be used, may be applied, and again the next day the fourth coat, which should be mixed the same as the third coat, that is, without oil. The roughstuff should, of course, be ground finely through the mill, as should all the other mixtures into which dry lead enters as one of the component parts. The last coat of roughstuff should be followed by the guide coat of French yellow ochre, mixed in japan and turpentine.

The body may now go to the smith's to be hung up. That

done, the wood worker should smooth up all places where the beds may project over the axles, put on bands, etc. The painting process should now be resumed by priming the iron work, which should stand two or three days to dry. While the carriage is hardening, the scouring of the body may be proceeded with. This should be done by an experienced hand, as great care is required to prevent the pumice stone from cutting through the successive coats of paint to the wood. The lump of pumice stone should be kept well filed, and plenty of water should be used to prevent the pores of the stone from becoming clogged with the paint. This process should be continued until *none* of the guide coat is left, and, being completed, the body should be washed off with clean, cold water, using the water tool for corners and for all places where the particles removed from the surface by the action of the pumice stone are apt to collect. The body may now be left to dry for twenty-four hours, and work resumed on the carriage parts. First, cut down thoroughly every part with No. 2 sand paper, dust off and apply lead coat mixed as follows, and ground finely through the mill: Dry white lead, in equal parts of japan and raw oil, reduced with turpentine. Judgment is required in the application of this coat, because, if the paint be too thin, the pores of the wood will remain unfilled, and if too thick, it cannot be spread evenly; apply with bristle paint brush, working the paint well into the wood.

This coat should stand at least four days for hardening; but in the meantime it would be well to soft putty the rims, faces of spokes, and all the flat surfaces of the carriage part. Putty for this work should be made of dry white lead, wet with equal

parts of oil, japan and varnish, using a square bladed putty knife. Work the filling well into the grain of the wood, taking care not to allow any to remain on the surface, because any loose particles not removed will crumble and fall away after the carriage has been for a time in use.

Returning again to the body part, work is resumed on that by going lightly over the whole surface with the very finest sand paper used for such work. Particular pains must be taken to clean out all the corners; and, should any imperfection be discovered, any holes or crevices remain unfilled, the same must be stopped with quick putty, and the body will be ready for color.

It is proposed to dispense with the old, and, it seems to us, unnecessary custom of going over the work again with what is called the surface lead coat.

It will now be understood that the successive coats of paint, with the labor of rubbing and smoothing, have brought the surface to the best possible condition for receiving the first coat of color. This surface, which has been gained by the expenditure of so much time and labor, it should be the constant effort of the workman to preserve, because for a scratch or indentation on the same there is no remedy but to go half way back and begin again.

It is proposed to finish this job in black, that being the most common, as well as the most important, of all the colors used in the carriage shop. It does not take long to learn that black (which is the carbon resulting from the burning of animal bones in close vessels) is serviceable and valuable just in proportion to the minuteness of the division of the particles. Black, not finely ground, has little body and comparatively little adhesive prop-

erty. The ordinary appliances and means for grinding colors in the paint shop are not equal to the task of grinding black to that degree of fineness which is essential to produce the best effects in finished black work.

Nor has there been, either in this country or abroad, until a recent invention, any machinery whereby hard pigments like black and some of the lakes could be reduced to that impalpable fineness, on which their value and good working qualities mainly depend, without adding so much to the cost as to put them beyond the use of coach painters entirely. Asking pardon for this digression, and taking for granted that you have on hand a stock of ground superfine colors for coach painters' use, and that the body which was left ready for color is to be finished in the best style, the next proceeding is to open a one pound can of ivory "jet" black, which will be done in a second with the help of a penknife blade. Black ground by means of this improved machinery will be found finer than a few years since it was thought possible to reduce any substance, and so soft and manageable that it incorporates at once with the thinning, and the mixture becomes as homogeneous as though it were all one substance. Enough of this black to go over the work is taken from the can and thinned with turpentine, using a trifle of raw linseed oil if you have time. Put on with flat camel hair brush, which leaves no brush marks. This coat had best stand one day before the second coat of black is applied. That done, work is ready for first coat of varnish.

CHAPTER III.

VARNISHING.

This is a most important point in the process of our work. So far, all has been done with reference to durability, as well as beauty; and as a coat of bad varnish will nullify all that has been done in that way, it behooves us to be not a little particular about the matter. It is not for us to say who makes the best rubbing varnish, but we have no hesitation in saying what, in our opinion, a rubbing varnish *should be* to fulfil all the requirements of the occasion. It must flow smoothly; it must dry hard, and yet elastic; it must rub well, clean down well, and not sweat. If you can find a varnish fulfilling all these necessary conditions, no matter what name it may bear, apply a coat of it to the work in hand—not a heavy coat, but a light one—with a flat brush, of which there are several kinds intended specially for varnish. A thick, flat badger hair varnish brush, of chisel form, about three or three and a half inches wide, is recommended for such work as is now the subject of treatment. Such a brush, if well cared for, will last a lifetime and grow better with age. But let us return to the body, which was left with one coat of rubbing varnish, and which must now be put aside to dry for three days. During this time work may be resumed on the carriage; first, by going over it again with sand paper; and now care must be exercised not to rub the sharp angles through

to the wood. After this, dust off and apply second lead coat, mixed as follows: Dry white lead wet with a mixture of japan and oil, in the proportion of three parts of the former to one of the latter, and made stiff; reduce with turpentine and apply as before, observing same directions as to grinding, reducing, etc. After three days another slight sand papering, and the last lead coat may be applied. In this last coat no oil need be used, but clear japan, and the paint should be applied as before. This being the last lead coat, we, of course, depend upon it for the smooth, perfect surface required for the reception of the color, which, with striping and varnishing, is to complete the job. For cutting down this coat use No. 1 sand paper, and be very careful to smooth out every corner and bead, and around every bolt head, nut, etc., and remember that the bases of the spokes require attention equally with the centres, as also do the hubs and rims. This operation, simple as it may seem, is no "child's play," and must not be intrusted to a careless hand, as the same amount of rubbing applied to the sharp corners as to the flat and rounded surfaces, will remove all the successive coats down to the wood; and, as these parts receive most of the wear and tear of actual use, it follows that these, of all, require to be best protected with the paint. The smoothing being properly performed, and *the loose particles removed from every part, nook and corner*, the work is ready for first coat of color. That portion of the ground black remaining in the can after the painting of the body will be found—supposing it to have been kept well covered with turpentine—as soft and pliable as when first opened. Mix a proper quantity of this with turpentine, using oil if desired, and apply with flat camel hair

brush. Ten hours will be sufficient to dry this coat, when the second will follow, mixed the same as the first coat. If the work is to be finished with a very wide stripe, put this on before the first coat of varnish. The carriage parts being ready for first coat of varnish, apply rubbing varnish, which should be as good in every respect as that used on the body and as carefully put on. Leaving this to harden, return to the body, which was left with one coat of varnish, and it will be found hard enough for first rubbing. Provided with a piece of cloth or felt and finely pulverized pumice stone, a water tool, and plenty of clean, cold water, proceed to cut down the varnish as closely as possible, being careful not to go through to the color and not to allow the pumice stone to dry on the varnish ; use the water tool freely in all the corners and around the mouldings. This operation will be repeated through three successive coats of varnish, and the body is ready for the trimming shop. The carriage part must now be subjected to the same rubbing process as has been applied to the body. This work must not be trusted to unskilful hands. An expert only can do it to perfection. If performed by inexperienced hands, the result will be an untimely striping of all the sharp angles, and the prospect of a well finished job materially impaired. Supposing this delicate operation to be successfully performed, the striping is next in order. On this subject there is not much to be said. If any one supposes he can do this because he has been told "how to do it," a single attempt will be all sufficient to cure him of his vain delusion ! There is no royal road to this accomplishment ; its attainment is through the steep path of long-continued practice. The striping done and dry, a thorough wash-

ing must follow, and be sure that every particle of dust you leave upon the work will be found by the varnish brush, and carelessness in this respect has too often called down maledictions upon the head of the innocent varnish maker. The carriage parts removed to the varnish room are ready for finishing coat, and the writer confesses himself at a loss how to give *any hints even* which shall prove of value as to the successful performance of this, of all, the most important in the whole proceeding. A knowledge, not only of the nature of varnish generally, but of the particular varnish to be used in the operation, is indispensable to success. To become an adept in this art requires long experience, confidence and self possession; and, we may add, a good conscience. A mistake in this is little less than a crime! And your shortcoming will not only rise in judgment against you, but will be known and read of all men.

The body received from the trimming shop is ready for rubbing, preparatory to the finishing coat of varnish. This, too, is a delicate piece of work and requires judgment, skill and practice. Remember that a *mote* on a panel becomes a *beam* in the eye of the beholder, and the smallest speck looms up like a distant hill in a misty atmosphere. Having completed it (for better or worse), close the door reverently behind you, lock it, call on your good angel to protect your work from harm, and await the result.

If not pressed for time, it will be well to allow the body to stand over one night before finishing. Remove it to the finishing room, which was put in order the previous evening; wash it off thoroughly with cold, clean water, using a clean sponge and a chamois skin which has been well broken in. Do not use

dusters which have been used on lead or color, or the mouldings will be discolored. After dusting off well, take a dry flat fitch brush and wet the ends of the hair with a small quantity of varnish. Let this stand for half an hour, and then go carefully and lightly over the whole surface. This will pick up every remaining particle of lint and dust, and there remains only to apply the varnish. This should be done as you should say your prayers—without the presence of any third party ; and, being done, retire without ostentation, locking the door behind you, and keeping it locked until the surface is no longer liable to injury from dust.

The next thing in order is to care for the tools. The brush used for picking up the lint should be first softened with a little oil, and then thoroughly washed with soap and water, and carefully put away for future use. Remember that good work depends in a great measure on the strictest attention to cleanliness, and a sloven cannot, in the nature of things, produce a perfect job in carriage painting. "*Neatness, order and economy*" should be the motto in every paint shop.

The work which has been under way for a period of about five weeks may now be considered as finished. It may stand a few days to harden and then be hung up. The bolts, etc., having been blacked off and dry, the completed carriage should receive the first of repeated washings which it is destined to undergo ; but this clean, cold water washing should be done by an experienced hand ; otherwise it is better left undone. If properly performed, it will tend to harden the varnish and will rather improve the general appearance. The finished vehicle may now be turned out for service, and there need be little

apprehension that the painting will not prove a durable and creditable job. It might have been completed in much less time and have presented to the eye quite as good an appearance. A great many carriages are so finished, and they may, and do no doubt, stand the ordinary wear and tear of country roads pretty well; but for use on city pavements *time* is an indispensable element, and it would not be safe to finish work for city wear in less time than we have given to the job in hand, unless some other and shorter method be adopted.

CHAPTER IV.

THE NEW METHOD.

For the last ten years ways and means have been devised, and every effort made to shorten the process of carriage painting—to expedite the work and turn it out in less time. The pace has not been fast enough for the "times," and quicker, shorter ways of arriving at the same result have been sought for, if not discovered. Keeping in mind the grand, pervading principle of compensation, we are not of those who believe the time heretofore deemed necessary to produce a first class job of coach painting can be materially shortened, at the same time retaining *all*

the good features and results of the slow process. That is to say, the chances are altogether in favor of durability, when oil enough has been used in the painting to insure elasticity, and prevent the material from drying to that flinty hardness which cannot be supposed to bear the shaking and concussions which all wheeled vehicles on city pavements are necessarily subjected to, without cracking, and, perhaps, chipping off. In short, the mode of painting carriages, such as we have described in the foregoing pages of this book, involves the expenditure of a certain number of days, which cannot be materially curtailed, without incurring the risk of what has been too common of late, viz. : jobs which soon perish with the using. If haste be a *sine qua non* with the painter ; if the work must be completed in half the time heretofore deemed essential in the production of enduring carriage painting, it is suggested that some other mode be adopted. If we will have railroad speed, we must abandon the stage coach system !

In writing about our "new way," we propose simply to give the results of our own experience. To give the facts as we find them is what we propose, leaving every man to his own judgment as to which course he will adopt or pursue.

Some time has elapsed since we inaugurated our experiments and practice looking to the compounding of such a mixture as would permit of shortening the time without impairing the durability.

We have long been of the opinion that coach painting could be reduced to a more perfect system, resulting in the end, in more durable work at a less cost. All of our experiments have, therefore, tended toward bringing about such a result, as

remarked in the first chapter of this treatise. The "priming" being all important, we have concentrated all our efforts in the direction of producing such a substance as shall close the pores of the wood against the absorption of all after coats, as well as dampness. In a word, we intend this substance to cement the surface of the wood. If our experiments show anything, they show us that we have brought into existence a "priming" for first coats upon new wood and iron, which comes nearer to possessing the above desirable qualities than any article ever used for coach painting.

The results of our experiments in the use of this new priming are given below:

1. The effectual closing of the pores of the wood so as to prevent the possibility of dampness going through the priming.

2. Absolute certainty that oil used in after coats will not be absorbed by the wood; and, as a consequence, the effectual prevention of the showing of the grain after the work in hand shall have been finished.

3. Drying to a hardness which insures a solid foundation, and which, having cemented itself into the grain of the wood, cannot be made to chip or flake off.

To give the reader a clearer idea of what we mean by cementing the surface of wood, we make the following illustration:

It is well known that a coat of lead in linseed oil, applied to a sheet of tin, will not, after it has become dry and hard, lose its elasticity, and simply for the reason that the tin does not absorb the oil.

The same mixture, applied to wood, will become, in the process of drying and hardening, lifeless and brittle, because of the

fact that the ever hungry wood will absorb or drink up the oil and leave the pigment dry. To close the surface against such absorption is what our new priming is intended to do ; and if we accomplish this, all "after coats" must necessarily retain their elasticity, and, once hard, grain showing is effectually prevented, which, in our opinion, has always been caused by the porous wood taking in a large proportion of the oils with which primings are compounded, leaving the pigment dry and non-elastic. In considering this matter, we have not lost sight of the fact, that any of the wood fillers now in use, which possess the nature of *never* becoming hard, but forever retaining their stickiness, are in every sense as bad as the substance from which the wood will absorb all elasticity, *because*, such a coat being soft when succeeding coats are applied, there is a gradual giving away of the whole foundation, thus affecting the finishing coat of varnish, causing a broken surface.

It is not to be supposed that any new claimant for public favor can find it all at once. Many pertinaciously cling to what has been tried and not found wanting. The bridge is good which carries safely !

But to the *modus operandi*. Our priming should be proceeded with as in the use of lead. It must be put on evenly and well brushed into the grain of the wood, and under no circumstances must the beads and corners be left full of the material.

A short, well worn brush is best for applying it, and the work should stand two days before the application of the first coat of our roughstuff. Putty on this coat of roughstuff after two days (summer heat), and give the putty two days to harden

before applying second coat, and then apply a coat per day until the job is filled.

Apply the guide coat, and rub down and finish as in the old way. The carriage part, coming from the smith's, should be trimmed up, bands put on, etc., and thoroughly sand papered, cutting close down to the wood. Dust off carefully, and apply coat of priming to every part, iron work included. Brush the priming well into the grain, taking care not to use too much. A thin coat is best. Next day putty rims, faces of spokes, and all flat places evenly with soft putty made elastic. The usual mode of proceeding is to smooth down next day for color; but our practice has been to apply with a flat camel hair brush a coat of our "carriage part filling." Reduced with turpentine to the consistency of color, previous to sand papering, this will insure a more perfect surface. By adopting this mode of proceeding, the sand paper will not be apt to clog and tear up the "priming," and, if proper care be exhibited in rubbing down, the carriage part filling will come off, and there will remain a good surface without injury to the foundation. Sand paper the next day, dust off, and apply first coat of color made more elastic with oil, and varnish than for coloring over lead paint.

From this point all subsequent proceedings up to the finish will be the same as the old method.

Such has been our mode of proceeding in the use of our "new priming." There may be better and shorter methods, but the results of our experiments have been satisfactory.

Disclaiming any intention of dictating a rule of action for the conduct of others, we suggest a trial of the mode above described to those who have not given the matter any attention or

trial. Every painter is supposed to have his own peculiar ways and notions as to how painting should be done. With these we have no desire or intention of interfering. The trade of coach painting is not to be classed with mere mechanic routine. It rises out of mechanical drudgery into the domain of art. The ability to perform such work in all its possible completeness and perfection is an accomplishment of which any man may be justly proud. It does not seem that any labor saving machinery can be brought to bear upon it in such a way as to lessen the necessity for cunning and skill, for education and taste.

Referring again briefly to the new mode of carriage painting, we would remark, that the question of time, durability and cost being all involved in it, the subject is entitled to a careful investigation.

Having concluded this somewhat lengthened description of the two modes of procedure in modern coach painting, we propose to record some of the reasons why coach painters should adopt the use of ground colors, rather than depend upon the usual facilities of the paint shop for producing them.

CHAPTER V.

THE USE OF READY GROUND COLORS.

The extreme adulteration of paints, which has of late years become so great an evil as to work out its own cure, has not

wholly grown out of a disposition on the part of the manufacturer to secure immoderate profits. The consumer has been most to blame, because of the ready credence he has given to the promises of needy and unscrupulous sellers, who have promised to give him more for his money than it is worth. It would seem almost beyond belief that a coach painter would risk spoiling a job in the hope of saving a half dollar on a gallon of varnish. Would such a case be a novelty? The adulteration of paints is so difficult of detection as to make the practice easy and comparatively safe. Take, for example, the article of carmine. In a color so expensive as this, a small percentage of adulteration makes a material reduction in the cost. A single ounce in a pound of this expensive color, would afford a larger profit to the seller than is usually realized by those who sell it pure at first hands. Nor could this be detected in using by the most skilful and practised painter. The cheat would be revealed only by the untimely fading of the color, and that would be too late to remedy the evil. In carriage painting, immediate effects are less important than remote consequences.

The colors referred to are prepared expressly for use in carriage work, and with reference only to the requirements of the trade. They are finer than it is possible to make them in the paint shop, for the reason that a specialty is made of this business with means and appliances which do not exist in the paint shop. To illustrate the convenience of these colors, suppose a case. Two or three new spokes in an old wheel are to be painted. The time necessary to prepare the paint from dry materials would be more than sufficient to match, paint, stripe and varnish with colors ready at hand. Or, suppose an old car-

riage to be revarnished. The color is mixed to match on the stone, and after, run through the mill. In the grinding process the color has changed, and is no longer a match. This may not be discovered until the application of varnish ; perhaps not even until the job is completed and placed in a stronger light. The result is general dissatisfaction ; but, suppose it to have been discovered in the process of grinding, the change involves an addition of various colors ; one after another is added, and with loss of much time, to say nothing of loss of patience, the result is a quantity of paint sufficient to paint two carriage parts, which, of course, is almost worthless for other work, and finds its way into the waste or slush tub, as it is not very elegantly termed in the paint shop. Had ground colors been on hand, the match could have been made in one quarter the time and with one quarter the stock, and the saving would have been both in time and material, and the danger avoided of mismatching the color in the process of grinding.

It may be said that a thoroughgoing, practical painter does not make such mistakes ; but such work is not always done by that style of workmen. It is often intrusted to boys and other persons of immature judgments ; and, in spite of all that may be said, such mistakes do happen in the best regulated shops. Suppose another case : A new body is ready for color—an ordered job—promised on a certain day. Time is limited, and a mistake now is little less than a crime. The paint shop is short of hands ! The foreman, driven with other work, finds just time to mix the black on the stone—after the same has been powdered by the boy—put into the mill, turn the screw, and give pressure enough to insure moderately fine color. The day is a

hot one. The crank turns slowly under the perspiring juvenile, who, like Mantilini, feels his life to be "one demnition grind." Tired and disgusted—not appreciating the importance of fine colors—he gives the thumbscrew a half turn, and, presto! the crank goes to a lively tune, the color comes out in no stinted quantity, and soon the task is at an end. Leaving the mill, which he neglects to clean, and the pot of half ground color, and feeling himself entitled to a half hour's recreation in reward for his industry and perseverance, he disappears, and the foreman comes from the varnish room with just enough of daylight left to color the body. The application of a single brushful of the paint informs him that in fineness it is equal to No. 2 sand paper; but there is no time to grind a fresh lot, and the cup of thin color could not be made fine in a week. So the boy, being found, is presented with a coat of—well, not blessings! The body, unpainted, stands till next day; or, being *smalted*, the surface requires an extra coat of rubbing varnish to present a respectable appearance. Do not such accidents frequently occur in the paint shop? Ground colors offer a remedy, sure, safe and economical, for all these complaints! Try them and be convinced.

Our Mr. Wolcott says: "These colors should come into general use, not only because they are *finer* than any other colors, but because they work more freely, flat more perfectly, and dry more readily than any others. After conversing with more than five hundred painters as to the cost of grinding colors in the shop—the extremes in the estimates given being thirty cents as the minimum and one dollar as the maximum average cost for labor alone, and a waste of from ten to fifteen per cent., we

think we may aver, that prepared colors, on the score of economy alone—to say nothing of all the other advantages—are worthy the attention of all who buy and use paint.

CHAPTER VI.

THE "PITTING" OF VARNISH.

THERE is somewhere a proverb which runneth thus, or words to like effect: "To cease to justify one's deeds unto one's self is the last infirmity of evil." Coach painters, as a rule, are very wise, very learned, and have reasons to account for all ordinary and extraordinary phenomena, as "plenty as blackberries;" but we ask, in all sincerity, did anybody ever hear one—or see anybody who ever did hear one—account for a spoiled job, by charging it to his own carelessness or neglect? Not that members of this craft are singular in this respect! All men are disposed to "justify themselves;" or, in other words, no man will load his own shoulders with blame, if he can, with any show of reason, shift it so that another back shall bear the burden. A dozen painters will, at a word, give a reason for the pitting of varnish. But as no two will perhaps agree, each of the statements must be taken with a liberal allowance of salt. A case in

point: a foreman in a first-class city shop was using ground colors. A hundred jobs had been turned out painted with these colors, which were in every respect satisfactory. One day the first coat of varnish did not flow smoothly. The cause? Oh! those ground colors, of course! Don't use any more! Now, gentle reader, this thing had occurred in that shop many, many times before, but then there were no ground colors to make a scape goat of. "To cease to justify one's deeds unto one's self is the last infirmity of evil."

A story told many years ago, in the *Knickerbocker Magazine*, may not be out of place here. It was of an old, ugly, ill-tempered, cross-grained country village loafer, who was always doing some ill-natured thing. It came to the ears of a fond *paterfamilias* that a pet lamb, the object of his pet children's affections, had been kicked by this aforesaid ugly customer; and, full of indignation, the aggrieved father sought out the offender, and demanded why and wherefore this assault had been made on the unoffending "pet." Ready with a reason, the old curmudgeon replied in this wise: "I'll tell you why I did it! *That lamb tried to bite me, and I'll kick any cussed lamb that tries to bite me!*" "To cease," etc.; but we will not repeat the text again. Now, in making the application of this little story, we expect ground colors to be made the scape goat of many sins. If varnish, previous to the introduction of ground colors, had not been known to have presented a "pitted" surface, it would be fair to ascribe to said colors the unfortunate result; but, as this thing has been known as long as varnish has been used, it would be reasonable, at least, to look elsewhere for the cause. Will those who are so ready to find a place whereon to rest the

blame of a spoiled job bear in mind the fact that these colors are prepared under the immediate supervision of an intelligent man, who has had an experience of more than a quarter of a century in the paint shop? It is well to be wise, but not good to be wise in one's own conceit! There are to-day hundreds of painters throughout the country using ground colors. In one or two solitary instances a complaint comes that the varnish "pits" over black. Now, as this does not happen in the ninety and nine cases, but in the one hundredth, we claim that it is only fair to look for some other cause before condemning the color. It must be kept in mind that coach painting is an art, and that something more is required to perform it satisfactorily than just enough of knowledge to mix a cup of color and apply it. Good judgment, sound discretion, close observation, no less than a cunning hand, are the *sine qua non* of success. Every painter, whose vision is not limited by the end of his nose, is aware that varnish is apt to "pit" on a japan gloss, especially if the color be not quite hard. The ground colors are mixed and ground with a purpose to avoid the use of japan in thinning for application. Turpentine for thinning, with a little (a drop or two) of oil, if you please, is all that is required.

CHAPTER VII.

NEW THINGS.

THE introduction of a new article—or an old one in a new form—is, under the most favorable circumstances, attended with many difficulties. Not only are there prejudices even of the skilful and honest workman to contend with, but the besotted prejudices of the ignorant and stubborn ; as, also, the "tricks of the trade," which unscrupulous salesmen know too well how to use to give a bad name to goods with which they cannot successfully compete in honest and fair competition, to say nothing of "the ways that are dark" among the very men of all others who would be supposed to encourage any improvement which would seem to lessen the drudgery of their daily occupations. Illustrative of the last named difficulty, let us give a case in point. The foreman of one of our city shops, after using ground colors for months with entire satisfaction and written commendation, all at once discovered that he could not use them more, because the varnish "pitted" over the black, which, certainly, were "pity, if 'twere true." Thinking to overcome the difficulty, not at first seeing the "cullered pusson in the fence," we called upon the disaffected one, and proposed to try the black then and there, and wait the drying, and see with our own eyes this most wonderful phenomenon. Curious to relate, there was nothing just then which could, by any possibility, be used to make

the test. *Mirabile dictu!* not a gig lamp even! Not a spoke, old or new, which would bear a coat of black; and the *innocent* could not even hazard a guess as to when there would probably be any work ready for a coat of black. As a last resort, we begged a small vial full of this varnish which behaved in such a *pitiful* manner, only when covering a coat of superfine ivory jet black. Thankful for this, we went home and proceeded to coat, with some of the identical color, four spokes, which were finished in black and varnished more than a year before. This was completed just at nightfall, and the next morning we applied to spoke number one, which presented a surface smooth as enamel, a coat of the aforesaid varnish. To spoke number two we applied a coat of the same varnish, mixed with two other varnishes, one of which was a hard polishing and the other a very elastic varnish! With number four we made another most severe test. In every case the result was a surface as smooth—aye, smoother than the most highly polished plate glass. "Was it not pitiful?"

CHAPTER VIII.

HOW TO MAKE THE BEST JOB IN BLACK.

A PURE black is, in theory, the absence of all the primary colors and of the extreme color, white. The presence of any

one of these detracts from the entireness of black. So, when black is viewed through any colored medium, it ceases to be pure black, and assumes that tone of color which would result from *mixing* the color of the medium with the black. For example : Black, when viewed through a medium of yellowish varnish, reflects, however slightly, a greenish hue ; and the greater the number of coats of clear varnish, the greater will be the detraction from the purity of the black. So with white. A single thin coat of the palest varnish, over a coat of pure white, detracts slightly from its purity. But successive coats, of the most colorless varnish, destroy the whiteness, and the surface reflects more or less of impure yellowish light. The same may be said of all the primary and secondary colors. Some of the mixed and broken colors would be improved, on the contrary, by a coating of yellowish translucent medium, as, yellow lake over drab, or over a mixed green. In avoidance of these accidents, and in order to secure the best results possible in carriage painting, we suggest the application of only one coat of clear varnish, and that, of course, the last one. We believe the best work turned out of any city establishment is finished without a single coat of clear color (we speak now more particularly of glazing jobs), and with but one coat of clear varnish. In carmine and the lakes, the first coat on the ground is put on in varnish, and every coat up to the last is colored. In this way a depth of color is obtained which can be had by no other process. It should be borne in mind that the opaque, or body colors, do not compare in beauty and brilliancy with the transparent colors. And, as a rule, the colors are beautiful in proportion as they are transparent. For examples : ultra-

marine blue, carmine, emerald green, scarlet and crimson lakes, etc. All are familiar with the beautiful colors reflected from the vases placed in the windows of apothecary shops. This results from the *depth* of colored fluid. A thin, flat glass vessel would not reflect such hues, though filled with the same substance. The principle is the same in carriage painting. To show the best possible colors, the light must be reflected, not from a flat, opaque surface, but from a surface which has beneath it a depth of continuous colored particles reaching away down through the successive coats of varnish to the groundwork. To be sure, this mode of proceeding is expensive, both in labor and material, but who ever gained any good thing without working for it? Black should be put on one coat of clear flat color; after that, every coat of varnish should contain more or less of the same black as used for the first coat, up to the finishing coat, which should be clear varnish. In this mode the black holds its color, and does not take on the greenish tinge, which otherwise it is impossible to avoid. All work, of course, is good or bad only by comparison. Any carriage is black enough in a dark night, and almost any tolerably good black looks well enough when viewed *per se*. It is only when placed in comparison with the best, that its inferiority is apparent; and men who strive to excel in their productions are not content to occupy inferior positions in any particular. "Excelsior" is a good motto for coach painters.

CHAPTER IX.

PAINTING and varnishing are operations which are not generally considered in their true respective forms and proper light. These operations are in the nature of things akin to that of plastering, and should be so looked at if we would find the true cause of and remedy for the troubles which the work of carriage painting necessarily involves. We allude now to the trouble known as chipping, peeling, or cleaving of the varnish from the underneath coat or surface of color. Painting differs from plastering, mainly in the lesser quantity of material used, and in the different modes of application; the one being done with a brush—the other with a trowel; but it is equally necessary and important, in either operation, that there shall be a surface to which the material may cling and fasten; or it will drop off from the spoke or wall—as the case may be—whenever the dislocating force shall be sufficient to overcome the slight cohesive power of the particles of paint, or plaster, or varnish.

If a plasterer should put his first coat of mortar on laths which were closely in contact—each particular lath as near to its neighbor as the lathing man could stick it—and that plaster should, on drying, drop off, what would be thought of the mason who should complain that the lime, the sand, and hair were deficient in adhesive qualities? Or, suppose the plasterer should put a coat of hard finish on a previous coat of the same—taking care to grease the first coat well—and should, on the drop-

ping off of the final coat, cry out against the plaster, and on that unoffending material lay all the blame of his own shortcomings?

We, have complaints quite as unreasonable as these in the hypothetical case just mentioned; and are not unfrequently taken to task "for muddying the water down stream." Yet, as the complaints last year did not amount to as much as one for every fifty thousand carriages painted with our colors, we do not propose to take the matter much to heart, and hope to survive, notwithstanding.

The object in this present writing is to set forth, as lucidly as may be, the general and particular failings and shortcomings of carriage painting as usually, and we may say almost universally, practiced. The obstacles in the way of first-class work are not few or strange! All who are in the trade are familiar with their several and respective features, and all would gladly be rid of them. In naming these shortcomings, we put them in their order of importance and frequency, thus—cracking of paint and varnish, chipping or flaking of varnish, and premature perishing of paint and varnish, when the *foregoing* named mishaps shall have been avoided.

Now, there can be no doubt of an existing disposition on the part of carriage makers and painters to so examine this question as to arrive at the true cause or causes of these accidents, and, if possible, to prevent their recurrence. We are talking of no new thing, but of what has occurred often and again, and which we fear will recur, in spite of all that we may write to the contrary.

If this monster had a single head, we might kill it at a blow! but, unfortunately, 'tis hydra-headed, and when one head is killed

another freshly succeeds to its place. So, to account for all these mishaps at a word seems simply impossible. A primary cause of failure in the painting department of carriage manufacturing may be the partial seasoning of the timber, and consequent shrinkage and rearrangement of the particles composing the same. Weather changes during the process of painting and varnishing may be potent for evil, and most difficult to understand and guard against. Badly ventilated work rooms, where no provision is made for needed circulation of air; adulteration of leads, colors, oils, turpentine, varnish and driers are fruitful sources of evil! Want of skill and good judgment on the part of the workman cause many calamities. Rubbing varnish made to dry in a day plentifully cheapened with cowrie gum and resin! Japans made from cowrie gum or demar, or both! Mixing of color without regard to proportions in the thinning materials! Introduction of different driers without knowledge of what the result of such mixing will be! Lastly, and most prolific source of evil, is the undue haste in the completion of the job in hand, with little or no regard to the time actually necessary to properly accomplish a first-class piece of work.

We do not propose to have enumerated *all* the causes of failure; but enough possibly for the present theme!

CHAPTER X.

NEXT in importance to finding out a cause of evil, is to provide or suggest a remedy. We would like to present a remedy for every ill, and make the way so plain that any man, though a coach-painter, need not err therein. How to do it, and how not to do it, are now the questions. Listen to our theory! Assuming the wood to be properly seasoned and ready for paint—priming is most important; because it is absolutely necessary that the coating on the wood shall hold its place from first to last—through thick and thin—under all vicissitudes and untoward circumstances, giving or yielding not a jot, not a particle. With such a foundation good work is possible; without it, not! What shall it be? Not something which will dry in half a day. As a rule, the longer paint stands without hardening—supposing the same to be properly compounded—the more tenaciously it will cling to the surface on which it may be placed. All drying substances tend to lessen the enduring qualities of linseed oil and hasten its disintegration and decay. Therefore, the more oil in the priming coat the better—supposing it shall have ample time to dry! We treat now of the old process of lead priming; but there is a proper system and a key-note; and that key-note once struck, all after proceedings should be in consonance with its vibration. If the key-note be the lightning speed process, let all subsequent proceedings be in harmony therewith. Better so, than introduce an elastic

stratum somewhere in the layers. A coat of quick drying color put on a foundation which is soft all the way up, will, in the nature of things, crack all over. This is an every day experience, and the disappointed workman — wanting a better theory—lays the blame upon the color. Hasty and ill-considered condemnation shows want of balance! Before laying the blame on the color and condemning *it*—the painter should assure himself that there exists no other possible cause for the disaster. A coat of the same color, applied to an old spoke or to a strip of glass, would probably exhibit an entirely different state of things. However, we can hardly expect such generous treatment always, and must, we suppose, continue to muddy the water, standing all the while, as we do, down stream. 'Tis said, "to cease to justify one's deeds unto one's self is the last infirmity of evil."

But to return. Suppose the work to have received an honest coat of priming, and the workman compelled to rush that work along, without giving the first coat a fair time and chance to harden properly! Making the best of the conditions and requirements, the painter (who is, we suppose, a man of long experience and sound judgment) puts on another coat of lead properly mixed (and in consonance with the theory of following the key-note), keeping this, as all succeeding coats, sufficiently elastic to prevent cracking, yet knowing all the time that none of the coats are hard, but that the mass is soft all the way through. Now in finishing over this foundation, he will—being as aforesaid, a man of sound discretion—use an elastic varnish, and so, do the best that can be done under such circumstances. The work being finished, and run out, and put to the test of

actual wear and tear, will show—what result ? It may not crack nor chip, but nothing is more certain than the fact that—like the seed sown on stony ground—it will perish, alas ! all too soon. The fact must not be lost sight of, but kept ever before the eye and the mind, that in carriage painting—as in almost every other process in art and science—*time* is an element which cannot be disregarded with impunity. On the contrary, it must receive its due weight and acknowledgment, or the operation wherein it shall not be properly heeded will end in disaster. If the manufacturer will not afford the painter proper and reasonable time wherein he may accomplish his work, he should at least have the grace to put the blame for failure where it properly belongs, and not on the shoulders of the innocent workman, or still worse, on the head of the maker of the last thin coat of color. We believe the case of the captive children of Israel has its parallel in the carriage trade ; and that the latter is oftentimes required to perform a labor more difficult of accomplishment than was required of the Jewish bondsmen by their Egyptian task masters. To make sun-dried bricks without straw may, so far as we know, be within the limit of human ingenuity ; but to begin and complete the painting and varnishing of a carriage—so as to secure the best results in the way of durability—in the space of two weeks is a feat beyond the skill of any man who ever yet painted carriages on this mundane sphere. What the denizens of the lunar conglomeration may be equal to in this line, we shall know one of these days—perhaps !

Again, the painter or workman is too often required to do in a given time what cannot be properly accomplished within

the specified limits. Take, for example, that most important work of properly filling up a carriage part—keeping the corners clean, and smoothing up every part as it should be. Let us anticipate the consequences in a case where the painter is required to do this job in about one quarter of the time which should properly be devoted to the same. In the very best aspect of the case, there must, of necessity, be masses of thick paint left in the corners, around clips, between the leaves of the springs and at the end of every spoke, which should not, with a view to a durable job, have been left to repose there. No amount of time given this work to dry, no care in the details of finishing, ornamenting, or varnishing, will prevent these masses of dried putty, as it were, from becoming disengaged from their resting places and dropping off when this carriage is subjected to the jolting and consequent vibration caused by rolling the wheels over stone-paved streets.

CHAPTER XI.

The next most common and vexatious trouble with the painting, is the flaking or cleaving of varnish from the color. This is no new thing, but has existed, we suppose, since the invention of the art of varnish making. Some of the causes of this annoy-

ing accident may be enumerated here—we do not pretend to give them all—as follows: Cotton seed oil in the color, however small the quantity, is a prolific source of evil in the way of causing the varnish to flake. Japan, made from inferior shellac, mixed with other and cheaper gums. Color mixed with japan, varnish and oil, when the due proportion of each is not properly attended to. Varnishing over a glassy surface. Fatty substances, whether turpentine, oil or paint. Certain rubbing varnishes unskilfully or carelessly made, or made from unsuitable materials, will cause this trouble. These are among the sources of this evil. No doubt there are others! A word of caution to painters just now may be pertinent. If you do use oil or varnish in *our* colors—or even in those ground in the shop—bear in mind the fact that the latter must in all cases be superior in quantity to the oil. No doubt, trouble in many paint shops has resulted because the painter has never fully appreciated the fact that varnish, oil, shellac, japan and turpentine may be so mixed as to give a surface which no rubbing varnish will adhere to. Really, too much caution cannot be exercised in putting these thinners together. There is nothing so good for a "binder" as pure, unboiled linseed oil; because, it rarely ever gives trouble if used only in proper quantity and proportion.

A glassy surface must not be varnished, but must be reduced to a "scratch coat," by the application of pumice stone and water.

The use of two driers in the same color is deprecated, unless the user shall know, with a knowledge gained by abundant experience, just what the effect of such mixing will be; and whether or not these driers will work well together.

Colors must never be finished with a japan gloss.

All paints, oils, driers and turpentine should be kept, as far as possible, in air tight vessels. Color cups must be kept covered, to exclude dust and air.

Every foreman in a carriage paint shop should *mix all the colors*, supposing he has time so to do. If not, he should intrust this most important operation to some *one* experienced hand, and not to *any* man or boy he may have under his charge. By strict attention to these little details, many of the troubles of the paint shop, as pitting of varnish, cracking, flaking, or premature perishing of the whole, may be avoided.

Now we come to a point in this question, wherefrom we propose to discuss the comparative merits of our ground colors with those as before produced in the carriage paint shop. Our claims are many, large, abounding and conclusive. First, we claim that our colors are economical to the last degree; that to use them costs nothing, for the reason that the labor of producing their equivalent in the paint shop would be more than we ask for the ready prepared colors. They are permanent beyond anything ever displayed; and uniform to a degree that the painter need have no fear of not being able to duplicate any job he may have before turned out.

We claim that, since the introduction of our prepared colors, the waste in the paint shop is one third less than before; that the labor and waste in grinding colors in the paint shop exceeds the prime cost of the goods we offer; also, that there is a saving in varnish, as no extra quantity need be applied to cover up a sanded surface. We claim that the labor of painting a carriage is much lessened by the use of our colors, and

that the labor and time saved by the use of our ready made colors in painting a carriage will be more than the cost of the paint consumed in the job. This is a feature to which we would call the special attention of the manufacturer, because of the fact, that while the outlay of money for materials is something tangible and always patent, the expenditure for labor is in a measure intangible—less observable, and much more difficult to measure, and weigh and count. There is, too, what we chose to designate as a false economy; a "penny wise" policy, exhibited too frequently by purchasers of colors which in other departments would be looked upon as extreme folly and stupidity. We allude to the common practice of procuring paints similar in name to those which the purchaser has been using, simply because the said paints are offered at a nominally lower price. In too many cases the consumer does not take the trouble to learn by experimental test, whether the nominally cheaper colors are worth as much or half, or only a quarter as much as those he has been using; but rushes to the conclusion that being cheaper in *name*, they must of course be cheaper in *fact*. There is, too, in this, a peculiar absurdity from the fact that the cost of the color actually consumed on the finish coat of any light carriage is very trifling, and that which works best and covers the undercoat most completely, everything else being equal, is the cheapest at whatever reasonable price, because of the consequent saving of material and labor. Any sane person in the trade will admit that a painter would not necessarily have made a good bargain simply because he had bought a hundred pounds of so-called coach black at ten cents a pound. The chaffering for a few

cents a pound difference, between an article which has been tried and never found wanting, and one which has never been tested, is, we think, not the right road to true economy. For example: supposing you have been using our black, and have found it to be uniformly fine, of good body—always working and covering well, and drying invariably so as to take varnish in the number of hours allotted to it. In the strife and competition for trade, some would-be rival or competitor offers you a paint in substitution of this well proved article—bearing the same name, at a price ten cents a pound less then you paid for the former color. Of course, in using this you are trying an experiment to your own cost if it fail, and with a gain so small in case of success, that there is nothing in the best aspect of the case to pay for the risk. One pound of our black will coat two light carriage parts. Admitting that the ten cents a pound is an important item, there yet remains the fact that the greatest possible accomplishments in the way of saving would be five cents in the painting of a four hundred dollar job; while, at the same time, the experiment may involve a loss of twenty or thirty dollars, and possibly two or three days' delay. Again, there is another most important feature involved, viz.: the question of permanence—of durability. This can be tested only by time; and years must necessarily elapse before this question can be settled. Our colors, and only ours, have been subjected to this test, and have always proved superior in this respect to any colors ever before used in carriage painting. We would not convey the idea that the practice of such false economy is common in the trade; indeed, such practice is the excep-

tion, and not the rule; but there are, and always will be in every calling, short-sighted individuals, who take the name for the thing—the word for the fact.

CHAPTER XII.

HAVING detailed somewhat this question of superiority, we take it for granted that all will admit the correctness of our premises and our conclusions; as also, the fact that we have accomplished much in the way of lifting the business of carriage painting out of the slough of despond—so to speak—in which we found it, and that we have quite overcome the most formidable of the difficulties before existing in the carriage paint shop. All this has not been done without a vast expenditure of time, talent, energy, experience and money. Machinery best adapted to bring about the desired result has been constructed without regard to cost, and vexation and disappointment were in many instances the only fruits of costly and laborious experiments. But, *labor omnia vincit!* and satisfactory success came as a crown to our worthy efforts. To-day our colors are the only ones for which there is a general demand. This demand is certainly and steadily extending, and in a few years will include all places where, in the civilized world,

carriages are made and painted. Admitting all these claims, the next question in importance to the trade is how, in what way, by what mode of proceeding, can the best results be realized in the use of our standard colors.

Listen while we review the subject in the light of ten years' every day experience, and set forth what we have found to be the best way to do it! Premising with the somewhat trite proverb that "Economy is wealth," we would impress most distinctly the importance of not taking from the opened can of paint, more material than is just amply sufficient to complete the job in hand. This point having received due attention, scrape cleanly and neatly the color from the sides of the can, level the top of the remaining mass evenly, and pour thereon turpentine sufficient to quite submerge the whole; then cover all with the top of the can and put away carefully for future use. We refer now, of course, to the ordinary can. With the patent press can, the contents will, as it were, take care of themselves. We take it for granted the mixing cup was scrupulously clean to begin with! In thinning, first add a small quantity of turpentine and stir, till the whole mass becomes smooth, homogeneous. Do not add the turpentine all at once. First stir the color well before adding any; then pour it in, little by little, stirring all the time, until the contents of the cup shall present a smooth, even mass, giving it the appearance of a perfect solution. The color now under consideration is supposed to be black. In its present state it is a quick drying substance, and if the exigencies of the case required, could be used so as to dry ready for varnish in less than an hour of time. This same mixture, if put over a ground not thoroughly hard and dry,

would crack all to pieces. To escape this dilemma, supposing the workman is required to finish quickly over a soft underneath, we would suggest adding to the color a quantity of elastic rubbing varnish, so that the coat would dry—not hard, but, in a measure, yielding. The present case, however, supposes ample time and no extraordinary haste, and that the mode of operation is to apply one coat of color only on a single day—which is, in our judgment, the right course; in such case, leave out a portion of the turpentine and add in lieu thereof a small quantity of pure raw linseed oil. As before said, our black, thinned wholly with turpentine, will dry ready for varnish in an hour's time or less, and this coat may be varnished over in that short time with safety, supposing the ground to be perfectly hard, but not otherwise. Yet we claim that for many reasons it will always be better to leave the job unvarnished overnight. Black, if varnished too quickly, will not give the same shade and density of color as when allowed ample time to dry, and we are certain that complaints have come to us setting forth that our blacks are not as good as formerly; the only foundation for which has been the mistake of varnishing over the color before it had time properly to dry. Any doubts existing as to the correctness of this theory may be removed by the following described proceedings: Let the painter take an old spoke, paint it black and leave it to dry overnight. Next morning let him draw a broad line through the centre of said spoke, using the same color as in the first coat, and in an hour after putting on the stripe let him varnish over all. This coat of varnish will reveal the fact, that the stripe is not so black as the body of the spoke by ten shades. This is one good reason why a black

coating of color should be left overnight before varnishing. Another reason for such a course is, that long experience has taught us that no painter, however skilful, can perform a perfectly satisfactory job in coach painting who does not give each and every coat of paint and varnish time to become dry and hard all the way through. In our judgment, ninety per cent. of all the carriage painting done in the United States is done too quickly; yet, we admit that some of the best jobs—to look at—have been done in this manner. Such work, however, when put to the test of actual use, does not endure as does work where time has been duly given to all the processes.

Referring again to the discoloration of black because of being varnished over too quickly, and the occasional complaints coming to us because of this, we have to request that each and every painter among our readers shall investigate this question for himself and his own convincing.

We do not propose to consider each and every of our fifty or more coach painters' colors in detail. What has been said respecting the use of black will apply in a general way to all the body colors.

It is, no doubt, true that most of the foremen painters in the carriage shops throughout the country have, by use and experience, familiarized themselves with the colors to such an extent, that they require no advice or direction in the matter. Yet, there are doubtless many in the trade who would gladly receive instruction as to the way of working lakes and carmines, in order to produce the best results with the least expenditure of labor and material.

In all operations, a good deal depends on getting a fair start.

Therefore, we would have all learners lay to heart this important truth : in all lake or carmine jobs, *let the ground be as close an imitation in tone of color to the glazing as possible.* This we believe to be the proper starting point, although we are conscious of the fact that we are not in this particular in full agreement with every member of the trade. To those, however, who take exception to this, our position, we would put a query : Would you attempt to produce a good job in carmine by glazing over a black ground? We anticipate to this question an answer unmistakably negative. If, then, to produce a good job in carmine, which is not only the brightest in color, but the most transparent of all the lakes—requires a rich ground in correspondence with itself—can there be any reason why the same rule does not hold good with all glazing colors ?

Supposing, then, the adoption of this principle, and the work prepared in accordance thereto—the next important question is the preparation of the color. It is taken for granted that the cup is clean, and that only enough color has been taken from the can to finish the work. To this must be added a very small quantity of pure spirits of turpentine, which must be well stirred in and thoroughly incorporated with the color. *This* must be repeated until the color in the cup is well broken up, smooth in the mass, and entirely homogeneous. Then add as much raw linseed oil as the color will bear, and yet dry ready for varnish by standing overnight. After the oil, add turpentine to thin to proper working consistency. It must work freely and flow perfectly. Nothing can be gained—but much may be lost—by working the color too thick. If the foregoing directions be followed, and the color be applied with a flat camel-

hair brush, *by a good workman*, there need be no fear as to the result. One coat of color and one of color in varnish upon a carriage part will be enough; but this will not be sufficient for panels. Another mode of operation in transparent painting is to put the color in varnish and flow on over the ground. This is, perhaps, the best mode in painting *bodies*, as a little color can be put in each succeeding coat of varnish until the last, which, of course, must be clear. This will give the best possible tint or color and will prove a lasting job.

CHAPTER XIII.

The money value of paint wasted in this country is enormous —greater, perhaps, than in all the world beside. Our reckless prodigality, in a certain way, is only equalled by our absurd attempts at economy. For example: A painter will sometimes spend the time and exertion necessary to walk a mile, all for the purpose of purchasing a can of paint a shilling less than he can buy it for under his very nose, and then neglect the proper precaution and preventive to waste, by omitting to cover up and take care of whatever paint may be remaining after the job is finished. Now, a quarter part of the time and labor necessarily expended in saving the shilling, devoted to care and cleanli-

ness, would have resulted in the saving of twice that amount. Another absurdity! a slavish devotion to names. When will men learn that two things are not necessarily the same, because they may be called by similar names? Take, for example, the greens used in carriage painting. These are either chrome or copper greens, and are briefly described in the foregoing pages. The *body* greens are chrome colors and the diaphanous greens are copper colors, as a rule. Chrome green, when pure, is of a dense body (almost, in this respect, rivalling lampblack), and covers and conceals all it touches, whether white or black. A fair selling price of this pure green, dry, would be about eighty cents per pound to consumers, and at this price it would be the cheapest green obtainable. Yet the probabilities are that a pound of this color, under its own proper name, cannot be found in any carriage shop in the United States. What, then, do we buy? Listen! The so-called "chrome green" of commerce is simply silica, sulphate of baryta, or carbonate of lime, colored with chrome green, in proportions varying from (the best), say, one pound of color to five pounds of the base, to one pound of color and two hundred pounds of the base; and all is sold as chrome green. Now, this earthy base, which is transparent when mixed in oils, adds to the value of paint in the same manner and degree as watering milk, sanding sugar, or mixing shoddy with wool in the production of cloth adds to the value of these articles respectively. What the painter requires is color, *not* sand! And considering that he has to pay vastly more for the color he buys when mixed *with* the sand, it would seem not to require a very elaborate argument to convince the dullest comprehension that for the consumer pure

colors are the cheapest. Some idea of the coloring property or power of real chrome green may be had, by reflecting on the fact that a single pound of it will impart its tone of color to a hundred pounds of a glassy translucent substance, causing it "in the mass" to resemble the pure green itself. I say "in the mass," for when this pretended green paint is spread upon a piece of glass, and viewed through a microscope or magnifying glass, it presents the appearance of vitreous minute grains, with a speck of color here and there, like small sea-birds scattered along a sandy beach. That a painter had better buy the color unmixed with the sand would seem a self evident proposition.

Dropping casually into a carriage paint shop, not long ago, we espied a can, with our label on it, signifying that it (the can) did contain, or had contained, ivory black in japan. It was uncovered and exposed to the dust, dirt and drying influences of a warm atmosphere. We looked into it, and found it contained about two thirds of its original contents; but of its original value not a fifteenth part was there. One after another of the hands, in want of a little black, had dipped into it with palette knife, and the deep pits or holes were left, unfilled, to dry around the sides, and thus waste the material in the speediest possible manner. We asked the foreman how he was suited with our goods. "Oh!" said he, "the black is first rate, but it *dries up so!*" We thought, if it did not dry under such treatment as that, it would well deserve any amount of maledictions.

The utmost care and attention, and the most scrupulous cleanliness are indispensable to economy and good results in the carriage paint shop.

CHAPTER XIV.

ADDRESSING the carriage builders and railway interests of the United States, we would respectfully call attention to the following statements, facts and assumptions, which will be found set forth with whatever of conciseness or brevity would seem consistent with the importance of the subject.

We need hardly allude to the fact, that we last year built in Brooklyn a varnish factory, more complete in its appointments, more perfect in all its arrangements, and affording greater facilities for the production of first-class goods, than any ever before erected.

We went into this enterprise with a determination to produce a better article in the way of fine coach and railway varnishes than had ever before been presented to the trade, and we now offer a full line of coach and railway varnishes, which we warrant superior in every particular.

We propose to name in detail the qualities and properties wherein we assume to have excelled, and afterwards to give what we consider good and sufficient reasons for the excellence of our products.

For our *Wearing Body Varnish* we claim perfect freedom and ease in working, a flowing property unequalled, and a brilliancy never before attained. It will retain its lustre in damp and exposed places longer than any other, and is less liable to take on that bluish film when exposed to heavy and continu-

ous rains. It will harden all through, without detracting from its wearing qualities; and its durability, in comparison with other varnishes, we guarantee.

Our *Black Rubbing Varnish* is absolute perfection in its way. It has all the good qualities required; is entirely free from all the undesirable ones; will stand for months without depositing the color in the bottom of the containing package; flows with a surface equal to the best clear rubbing varnish, and will dry in ordinary summer temperature, so as to be rubbed with perfect safety, in 48 hours. No black rubbing varnish ever before produced, either in this country or abroad, will for a moment bear comparison with the superior article which we now offer to the trade, and for which we ask a single trial, in the confidence that one experiment will convince the most incredulous reader that our commendations and assertions are modest, and not exaggerated.

All the other varnishes included in our line of fine goods properly belong in the same category with those named above, for the reason that all are made from the very best materials, manipulated by the most experienced and skilful hands, by those who are wholly acquainted with the wants, needs and requirements of the *carriage and railway trade*, gained by many years of practice and familiarity with all the branches thereof; and in addition to all this, the fact that no varnish is ever sent out to our customers which has not been thoroughly tested for drying qualities. These tests, let it be remembered, are made in rooms which are kept at a uniform temperature of 70° day and night. Under such conditions our varnishes may be relied upon to dry according to the time named in our descrip-

tive list. Of course, such results cannot be expected when the varnish shall be used in a room the temperature of which is allowed to fall much below 70°.

On the theory that every man is bound to give a reason for the hope that is within him, we beg your attention to some facts which we present in support of the reasonableness of our claims. We began the business with all the advantages, so far as the production of the goods is concerned, possessed at the present moment by those who began varnish-making twenty-five years ago in a shanty, with a storage capacity of two hundred gallons all told. The appointments of our factory are more complete than the best. We had, at the start, tank room equal to the storage of forty-four thousand gallons of varnish. We wished to insure uniformity as well as excellence in our products. Our means and facilities for the procuring and obtaining the best in the way of material were unexcelled. We felt ourselves warranted in making these large and extraordinary expenditures, for the reason that our acquaintance with the trade would seem to insure to us a paying business from the beginning.

We have in Brooklyn, within ten minutes' walk of Fulton Ferry, twelve city lots covered with costly factory buildings and storehouses, which, with the best machinery and an experience in the paint business of nearly fifty years, give us facilities in the production of fine goods such as exist nowhere outside of us.

The attention of railway officials, such as Purchasing Agents, Master Car Builders and Master Painters, is most respectfully asked to what follows.

For some years we have furnished many of the largest rail-

road companies with special car body colors, and by permission we refer to the following companies, for whom we have made such goods :

PENNSYLVANIA RAILROAD COMPANY, Enoch Lewis, Purchasing Agent, Philadelphia, Pa.

PENNSYLVANIA COMPANY, Wm. Mullins, General Purchasing Agent, Pittsburgh, Pa.

BALTIMORE & OHIO RAILROAD COMPANY, N. S. Hill, Purchasing Agent, Baltimore, Md.

CHICAGO & ALTON RAILROAD COMPANY, A. V. Hartwell, Purchasing Agent, Chicago, Ill.

CHICAGO & NORTHWESTERN RAILROAD COMPANY, R. W. Hamer, Purchasing Agent, Chicago, Ill.

LEHIGH VALLEY RAILROAD COMPANY, L. Chamberlin, Purchasing Agent, Philadelphia, Pa.

NORTHERN RAILROAD OF CANADA, F. W. Cumberland, Superintendent, Toronto, Ont.

NAUGATUCK RAILROAD COMPANY, G. W. Beach, Superintendent, Waterbury, Ct.

PHILADELPHIA, WILMINGTON & BALTIMORE RAILROAD COMPANY, S. A. Hodgman, Superintendent of Motive Power, Wilmington, Del.

NEW YORK, NEW HAVEN & HARTFORD RAILROAD COMPANY, R. N. Dowd, Commissary, New Haven, Ct.

UNION PACIFIC RAILROAD COMPANY, } A. D. Clark, Purchasing
KANSAS " " " } Agent, Omaha, Neb.

CHICAGO, BURLINGTON & QUINCY RAILROAD COMPANY, Wm. Irving, Purchasing Agent, Chicago, Ill.

LOUISVILLE, CINCINNATI & LEXINGTON RAILROAD COMPANY, Wm. Mahl, Purchasing Agent, Louisville, Ky.

GRAND TRUNK RAILWAY, N. Wall, Port Huron, Mich.

LITTLE ROCK & FORT SMITH RAILROAD COMPANY, T. HARTMAN, Purchasing Agent, Little Rock, Ark.

ATCHISON, TOPEKA & SANTA FÉ RAILROAD COMPANY, F. M. SMITH, Purchasing Agent, Topeka, Kan.

EVANSVILLE & TERRE HAUTE RAILROAD COMPANY, JOHN L. WHITE, Purchasing Agent, Evansville, Indiana.

ST. LOUIS, VANDALIA & TERRE HAUTE RAILROAD COMPANY, C. R. PEDDLE, Purchasing Agent, Terre Haute, Ind.

TERRE HAUTE & INDIANAPOLIS RAILROAD COMPANY, C. R. PEDDLE, Purchasing Agent, Terre Haute, Ind.

BOSTON & ALBANY RAILROAD COMPANY, C. O. RUSSELL, Purchasing Agent, Springfield, Mass.

GILBERT & BUSH COMPANY, Troy, N. Y., Railroad Car Builders.

WASSON MANUFACTURING COMPANY, Brightwood, Mass., Railroad Car Builders.

BILLMEYER & SMALL MANUFACTURING COMPANY, York, Pa., Railroad Car Builders.

JACKSON & SHARP COMPANY, Wilmington, Del., Railroad Car Builders.

BARNEY & SMITH MANUFACTURING COMPANY, Dayton, Ohio, Railroad Car Builders.

The advantages derived from the use of such special colors are many, a few of which are found below :

Absolute uniformity of shade.

Durability, as we use perfectly pure materials.

Saving of money, because of small quantity required.

Saving of time, in the putting on of the same.

Saving of labor and material, as no extra amount of varnish will be required to hide a sanded surface.

Larger degree of certainty that there will be an absence of

cracked work, as our mixtures are all uniform, being done by weight only.

We make any desired shade, it only being necessary that purchasers furnish us with sample of color desired, stating the time they would like to have the paint dry in.

We shall be glad to furnish samples and give prices to any who may wish to avail themselves of the foregoing advantages.

Very Respectfully,

JOHN W. MASURY & SON.

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